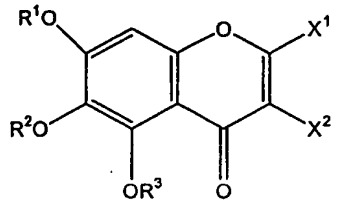
What is claimed is:

1. A compound according to formula I:

(I)



wherein:

R^1, R^2, and R^3 are each independently H, alkyl, alkenyl, alkynyl, $-SO_3H$, $-PO_3H_2$, or carbohydrate;

or R^1 and R^2 are each independently $(CH_2)_nY$ and $[CH_2CH(OH)CH_2]Y$, wherein Y is H, OR^4, NR^5R^6, $COOR^4$, or $OONR^5R^6$ wherein R^4, R^5, and R^6 are each independently H, alkyl, alkenyl, alkynyl, or carbohydrate, and R^5 and R^6 together may form a 5 to 7-membered ring;

or R^1 and R^2 together are heterocycles;

or R^2 and R^3 together are heterocycles; and

X^1 and X^2 are each independently of the formula:

$$Ar–X^3–T$$

wherein Ar may or may not be present and when Ar is present, Ar is phenyl, furanyl, thienyl, pyridyl, cyclohexyl or benzyl; wherein X^3 is H, C, N, NR', NR'R", NR'SO_2 R", O, or S, subject to the proviso that the compound according to formula I is not baicalein or 5,6,7-trihydroxyisoflavone, wherein R' and R" are each independently H, alkyl, alkenyl, alkynyl, or carbohydrate; wherein T is $(CH_2)_nY$ or $[CH_2CH(OH)CH_2]Y$, wherein Y is H, OR^4, NR^5R^6, $COOR^4$, or $OONR^5R^6$ wherein R^4, R^5, and R^6 are each independently H, alkyl, alkenyl, alkynyl, or carbohydrate, and R^5 and R^6 together may form a 5 to 7-membered ring; or pharmaceutically acceptable salts thereof.

2. The compound according to claim 1, wherein the alkyl is a lower alkyl.

3. The compound according to claim 1, wherein the carbohydrate is a monosaccharide, oligosaccharide, or polysaccharide, or combinations thereof.

4. The compound according to claim 1, wherein R^1, R^2 and R^3 are each independently $-SO_3H$ or $-PO_3H_2$.

5. The compound according to claim 1, wherein R^1 and R^2 together is a five-membered or six-membered ring structure.

6. The compound according to claim 1, wherein R^2 and R^3 together is a five-membered or six-membered heterocycle.

7. The compound according to claim 1, wherein R^1, R^2, and R^3 are each H, Ar is phenyl, and X^3 is H.

8. The compound according to claim 1, wherein the compound is a salt form of the compound.

9. The compound according to claim 8, wherein the salt form of the compound is a sodium or potassium salt of the compound.

10. The compound according to claim 1, wherein the compound is water-soluble.

11. The compound according to claim 1, wherein the compound is 4`-(N,N-dimethylamino)-5,6,7-trimethoxyflavone, 4'-(methylamino)-5,6,7-trimethoxyflavone, 2,3-diphenyl-5,6,7-trimethoxychromone, 2,3-diphenyl-5,6,7-trihydroxychromone, 4'-(methylsulfonamido)-5,6,7-trimethoxyflavone or 4'-(Carbmethoxymethoxy)-5,6,7-trimethoxyflavone.

12. A pharmaceutical formulation comprising a compound according to claim 1 and at least one pharmaceutically acceptable carrier, diluent, or excipient.

13. The pharmaceutical formulation comprising a compound according to claim 12, wherein the pharmaceutically acceptable carrier is an aqueous carrier.

14. A method of treating diseases associated with overproduction of TNF-α selected from the group consisting of arthritis, rheumatoid arthritis, Crohn's disease, ulcerative colitis, insulin resistance, multiple sclerosis, organ failure, pulmonary fibrosis, and atherosclerosis, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

15. A method of treating diseases associated with overproduction of superoxide anion radical selected from the group consisting of Alzheimer's disease, Parkinson's disease, aging, cancer, myocardial infarction, atherosclerosis, autoimmune disease, radiation injury, emphysema, sunburn, joint disease, and oxidative stress, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

16. A method of treating septic shock, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

17. A method of treating inflammation, comprising administering to a subject in need thereof, an effective amount of a compound according to claim 1, when the compound is an isoflavone.

18. A method of treating organ damage, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

19. The method according to claim 18, wherein the organ damage is liver damage, lung damage, or kidney damage, or combinations thereof.

20. A method of treating neurodegenerative diseases selected from the group consisting of Parkinson's disease, Alzheimer's disease, cognition deficit, memory loss, and stroke, and combinations thereof, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

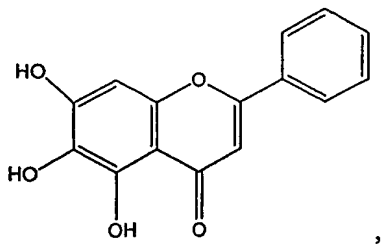
21. A method of treating cancer, comprising administering to a subject in need thereof, an effective amount of a compound according to claim 1.

22. The method according to claim 21, wherein the cancer is selected from the group consisting of skin cancer, small cell lung cancer, testicular cancer, esophageal cancer, breast cancer, endometrial cancer, ovarian cancer, central nervous system cancer, liver cancer, lung cancer, and prostate cancer, and combinations thereof.

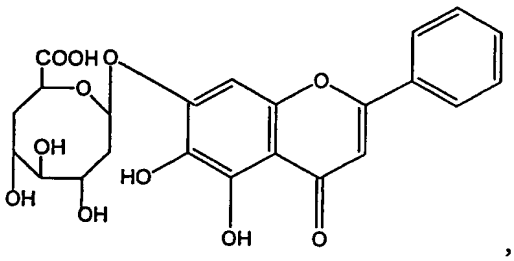
23. A method of treating cardiac disorders selected from the group consisting of cardiac ischemia, congestive heart failure, and hypertension, and combinations thereof, comprising administering to a subject in need thereof an effective amount of a compound according to claim 1.

24. A method of treating conditions selected from the group consisting of diseases associated with the overproduction of TNF-α, overproduction of superoxide anion radical, organ damage, arthritis, neurodegenerative diseases, cancer, and cardiac disorders, and combinations thereof, comprising administering to a subject in need thereof, a pharmaceutical composition comprising a therapeutically effective amount of a compound selected from the following:

(II)

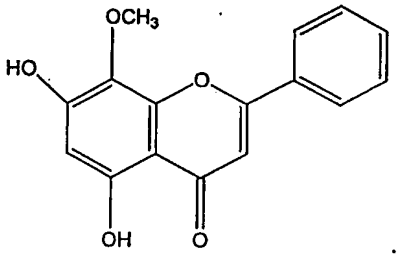


(III)



, and

(IV)



25. The method according to claim 24, wherein the organ damage is liver damage, lung damage, or kidney damage, or combinations thereof.

26. The method according to claim 24, wherein the neurodegenerative diseases are selected from the group consisting of Parkinson's disease, Alzheimer's disease, cognition deficit, memory loss, and stroke, and combinations thereof.

27. The method according to claim 24, wherein the cancer is selected from the group consisting of skin cancer, small cell lung cancer, testicular cancer, esophageal cancer, breast cancer, endometrial cancer, ovarian cancer, central nervous system cancer, liver cancer, lung cancer, and prostate cancer, and combinations thereof.

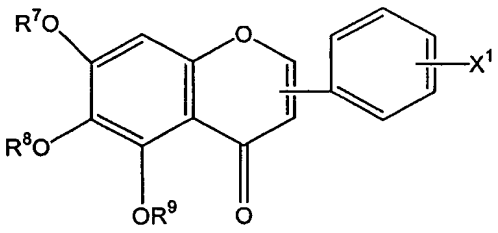
28. The method according to claim 24, wherein the cardiac disorders are selected from the group consisting of cardiac ischemia, myocardial infarction, congestive heart failure, and hypertension, and combinations thereof.

29. The method according to claim 24, wherein the pharmaceutical composition is administered orally or parenterally.

30. The method according to claim 24, wherein the pharmaceutical composition is administered in combination with at least one other therapeutic agent useful for the prevention or treatment of conditions associated with overproduction of TNF-α, overproduction of superoxide anion radical, septic shock, inflammation, organ damage, neurodegenerative diseases, cancer, and cardiac disorders.

31. A method of treating conditions selected from the group consisting of diseases associated with the overproduction of TNF-α, overproduction of superoxide anion radical, septic shock, organ damage, neurodegenerative diseases, cancer, and cardiac disorders, and combinations thereof, comprising administering to a subject in need thereof, a pharmaceutical composition comprising a therapeutically effective amount of a compound of the formula V:

(V)



wherein:

R^7, R^8, and R^9 are each independently H, alkyl, $-SO_3H$, $-PO_3H_2$, carbohydrate, or benzyl;

or R^7 and R^8 together are heterocycles;

or R^8 and R^9 together are heterocycles;

X^1 is H, C, NH_2, $NHCOCH_3$, NO_2, or OR^{10}, wherein R^{10} is H, alkyl, carbohydrate, or benzyl, or pharmaceutically acceptable salts thereof, with the proviso that when Ph-X^1 is at the 2-position and R^7, R^8, and R^9 are each independently H, alkyl or carbohydrate, the compound is not used to treat septic shock.

32. The method according to claim 31, wherein the alkyl is a lower alkyl.

33. The compound according to claim 1, wherein R^1, R^2 and R^3 are each independently $-SO_3H$ or $-PO_3H_2$.

34. The method according to claim 31, wherein the carbohydrate is a monosaccharide, oligosaccharide, or polysaccharide, or combinations thereof.

35. The method according to claim 31, wherein R^7 and R^8 together are heterocycles.

36. The method according to claim 31, wherein R^7 and R^8 together is a five-membered ring structure or a six-membered ring structure.

37. The method according to claim 31, wherein R^8 and R^9 together is a five-membered or six-membered ring structure.

38. The method according to claim 31, wherein X^1 is substituted on the ortho, meta, or para position of the phenyl ring.

39. The method according to claim 31, wherein the compound is 5,6,7-trihydroxyisoflavone.

40. The method according to claim 31, wherein the organ damage is liver damage, lung damage, or kidney damage, or combinations thereof.

41. The method according to claim 31, wherein the neurodegenerative diseases are selected from the group consisting of Parkinson's disease, Alzheimer's disease, cognition deficit, memory loss, and stroke, and combinations thereof.

42. The method according to claim 31, wherein the cancer is selected from the group consisting of skin cancer, small cell lung cancer, testicular cancer, esophageal cancer, breast cancer, endometrial cancer, ovarian cancer, central nervous system cancer, liver cancer, and prostate cancer, and combinations thereof.

43. The method according to claim 31, wherein the cardiac disorders are selected from the group consisting of cardiac ischemia, myocardial infarction, congestive heart failure, and hypertension, and combinations thereof.

44. The method according to claim 31, wherein the pharmaceutical composition is administered in combination with at least one other therapeutic agent useful for the prevention or treatment of conditions associated with overproduction of TNF-α, overproduction of superoxide anion radical, septic shock, inflammation, organ damage, neurodegenerative diseases, cancer, and cardiac disorders.

45. The method according to claim 31, wherein the pharmaceutical composition is administered orally or parenterally.

46. A method of treating conditions selected from the group consisting of diseases associated with the overproduction of TNF-α, overproduction of superoxide anion radical, septic shock, organ damage, neurodegenerative diseases, cancer, and cardiac disorders, and combinations thereof, comprising administering to a subject in need thereof, a pharmaceutical composition comprising a therapeutically effective amount of a compound selected from the group consisting of baicalein-6-sulfate, baicalein-6,7-disulfate, bacalein-6-phosphate, bacalein-6,7-diphosphate, bacalein-5,6,7-triphosphate, sodium and potassium salt derivatives thereof, and pharmaceutically acceptable salts thereof.

47. The method according to claim 46, wherein the organ damage is liver damage, lung damage, or kidney damage, or combinations thereof.

48. The method according to claim 46, wherein the neurodegenerative diseases are selected from the group consisting of Parkinson's disease, Alzheimer's disease, cognition deficit, memory loss, and stroke, and combinations thereof.

49. The method according to claim 46, wherein the cancer is selected from the group consisting of skin cancer, small cell lung cancer, testicular cancer, esophageal cancer, breast cancer, endometrial cancer, ovarian cancer, central nervous system cancer, liver cancer, lung cancer and prostate cancer, and combinations thereof.

50. The method according to claim 46, wherein the cardiac disorders are selected from the group consisting of cardiac ischemia, myocardial infarction, congestive heart failure, and hypertension, and combinations thereof.

51. The method according to claim 46, wherein the compound is baicalein 6-sulfate or sodium or potassium salt derivatives thereof.

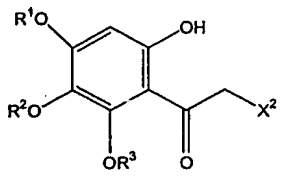
52. The method according to claim 46, wherein the pharmaceutical composition is administered in combination with at least one other therapeutic agent useful for the prevention or treatment of conditions associated with overproduction of TNF-α, overproduction of superoxide anion radical, septic shock, inflammation, organ damage, neurodegenerative diseases, cancer, and cardiac disorders.

53. The method according to claim 44, wherein the pharmaceutical composition is administered orally or parentally.

54. A method of treating conditions selected from the group consisting of diseases associated with the overproduction of TNF-α, overproduction of superoxide

anion radical, inflammation, septic shock, organ damage, neurodegenerative diseases, cancer, and cardiac disorders, and combinations thereof, comprising administering to a subject in need thereof, a pharmaceutical composition comprising a therapeutically effective amount of 4`-(N,N-dimethylamino)-5,6,7-trimethoxyflavone, 4'-(methylamino)-5,6,7-trimethoxyflavone, 2,3-diphenyl-5,6,7-trimethoxychromone, 2,3-diphenyl-5,6,7-trihydroxychromone, 4'-(methylsulfonamido)-5,6,7-trimethoxyflavone or 4'-(Carbmethoxymethoxy)-5,6,7-trimethoxyflavone.

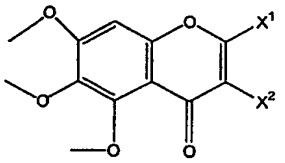
55. A method of synthesizing a compound of formula I, or pharmaceutically acceptable salts thereof, comprising reacting a compound of formula (VI): (VI)



wherein R^1, R^2, and R^3 are each independently H, alkyl, alkenyl, alkynyl, -SO_3H, -PO_3H_2, or carbohydrate; or R^1 and R^2 are each independently $(CH_2)_nY$ and $[CH_2CH(OH)CH_2]Y$, wherein Y is H, OR^4, NR^5R^6, $COOR^4$, or $OONR^5R^6$ wherein R^4, R^5, and R^6 are each independently H, alkyl, alkenyl, alkynyl, or carbohydrate, and R^5 and R^6 together may form a 5 to 7-membered ring; or R^1 and R^2 together are heterocycles; or R^2 and R^3 together are heterocycles; with $(ArCO)_2O$ $ArCO_2Na$ and an acid sodium salt wherein Ar is as defined above.

56. A method of synthesizing a compound of formula I wherein X^1 and X^2 represent Ar–X^3–T wherein X^3 is H, R^1, R^2, and R^3 are H or one of R^1 and R^2 is CH_3, or pharmaceutically acceptable salts thereof, comprising reacting a compound of formula VII:

(VII)



wherein X^1 and X^2 represent Ar–X^3–T wherein X^3 is H, with aqueous hydrobromic acid (HBr) or boron tribromide (BBr3).

57. A method of synthesizing a compound of formula I, or pharmaceutically acceptable salts thereof, comprising reacting a compound of formula I wherein X^1 and X^2 represent Ar–X^3–T wherein X^3–T is OH or NH_2 with an electrophile such as W(CH_2)nY, W $CH_2CH(O)CH_2$, or $HOCH_2$ CH(O) CH_2 wherein W is a leaving group and Y is H, OR^4, NR^5R^6, $COOR^4$, or $OONR^5R^6$ wherein R^4, R^5, and R^6 are each independently H, alkyl, alkenyl, alkynyl, or carbohydrate, and R^5 and R^6 together may form a 5 to 7-membered ring.